

NON-PUBLIC?: N
ACCESSION #: 9008090069
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Seabrook Station PAGE: 1 OF 3

DOCKET NUMBER: 05000443

TITLE: Reactor Trip Due to a Low Electrohydraulic Control Oil Pressure
Signal

EVENT DATE: 07/05/90 LER #: 90-018-00 REPORT DATE: 08/03/90

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 075

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION:

50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:

NAME: Richard R. Belanger, Lead Engineer- TELEPHONE: (603) 474-9521
Compliance, Extension 4048

COMPONENT FAILURE DESCRIPTION:

CAUSE: SYSTEM: COMPONENT: MANUFACTURER:

REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT:

On July 5, 1990, at 4:29 P.M., while in MODE 1 at 75% reactor power, a reactor trip with turbine trip occurred. The trip was initiated by a main steam low Electrohydraulic Control (EHC) oil pressure signal. A Main Feedwater Isolation also occurred due to the sensitivity of the steam generator level trip signals to pressure pulses.

The reactor tripped due to contact closure of the EHC oil pressure switches satisfying the two out of three logic for reactor trip on low EHC oil pressure. All applicable trips and interlocks associated with the reactor trip and feedwater isolation functioned as designed. All operator actions were determined to be appropriate.

The root cause has been determined to be excessive vibration of the EHC pressure switches due to their mounting location. This vibration caused

the switches to close even though adequate EHC oil pressure existed. Corrective actions include relocation of the pressure switches to an area with less vibration as well as monitoring the pressure switches in their new locations upon the plant's return to power operations. Additionally, a design change to eliminate the effects of the pressure pulses on the steam generator level trip signals will be evaluated.

This is the first event of this type at Seabrook Station.

END OF ABSTRACT

TEXT PAGE 2 OF 3

On July 5, 1990 at 4:29 P.M. EDT, a reactor trip with a turbine-generator trip occurred while the plant was at 75% reactor power. The reactor trip was initiated by a low Electrohydraulic Control (EHC) oil pressure signal.

Description of Event

The reactor was brought to 75% power for the first time at 11:15 A.M. on July 5, 1990. Prior to the trip, spurious, momentary EHC low pressure alarms for channels I and III were received in the control room despite adequate and stable pressure. These pressure switches were mounted on three of the four main steam stop valves. The design function of the pressure switches is to provide a reactor trip signal when emergency trip oil pressure indication falls below 500 psig on two of the three pressure switches, provided the plant is operating above the P-9 setpoint (20% power). Additionally, when the turbine load set was lowered in preparation for main steam control valve testing, the plant had experienced 20-40 MWe load swings and sporadic oscillations in feedwater flow.

The initiating event was contact closure in pressure switches MS-PSL-3075 and MS-PSL-3077. This satisfied the two out of three logic for reactor trip on low EHC oil pressure. Just prior to the event, the pressure switches were observed to be vibrating excessively. The vibration is due to mounting location. Following the reactor trip and turbine trip, a Main Feedwater Isolation JB! occurred. The isolation signal, once received, seals into the circuitry and must be reset. Difficulty was experienced in resetting the feedwater isolation signal due to an unexpected steam generator high-high level signal (P-14) in addition to the expected low T avg. signal. It is believed that pressure pulses were created by the rapid closure of the turbine control valves. These pressure pulses were transmitted through the steam flow transmitters' water filled lines and sensed by the high pressure side of the steam

generator narrow range level transmitter. This resulted in the steam generator high-high level signal. Actual steam generator water levels did not approach the high-high level setpoint at any time.

Safety Consequences

There were no adverse safety consequences as a result of this event. All the applicable trips and interlocks associated with the reactor trip and feedwater isolation functioned as designed.

All operator actions were determined to be appropriate to ensure the safety of the plant. At no time during this event was there any impact on the health and safety of plant employees or the public.

Root Cause

The root cause of this event has been determined to be excessive vibration of the EHC pressure switches. The pressure switches were mounted on the turbine stop valve actuators. These switches were observed by the system engineer to be vibrating significantly higher at the 75% power plateau prior to the trip. The vendor's installation and maintenance instructions warns that spurious actuations may result from excessive vibration. EHC pressure was verified to be adequate throughout the day.

TEXT PAGE 3 OF 3

Corrective Actions

After the trip, the plant was placed in HOT STANDBY in accordance with operating procedure OS1000.11, "Post Trip to HOT STANDBY". An event evaluation, root cause analysis, and Human Performance Enhancement System (HPES) analysis were initiated and completed before restart of the reactor.

A design change was implemented to relocate the pressure switches to an area with less vibration. The pressure switches will be monitored throughout the remainder of power ascension testing to ensure that the new location is acceptable for switch operation.

With respect to the feedwater isolation signal, a design change is being evaluated to install a filter that would eliminate the effects of the pressure pulses on the steam generator level trip signals. This evaluation is expected to be completed by November 30, 1990.

Plant Conditions

At the time of this event, the plant was in MODE 1, Power Operation, at 75%, with an RCS temperature of 561 degrees Fahrenheit and pressure of 2235 psig.

This is the first event of this type at Seabrook Station.

ATTACHMENT 1 TO 9008090069 PAGE 1 OF 2

New Hampshire Ted C. Feigenbaum
Yankee Senior Vice President and
Chief Operating Officer

NYN-90150

August 3, 1990

United States Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Document Control Desk

References: Facility Operating License No. NPF-86, Docket No. 50-443

Subject: Licensee Event Report (LER) No. 90-018-00: Reactor Trip
Due To Low Electrohydraulic Control Oil Pressure Signal

Gentlemen:

Enclose please find Licensee Event Report (LER) No. 90-018-00 for Seabrook Station. This submittal documents an event which occurred on July 5, 1990, and is being reported pursuant to 10CFR50.73(a)(2)(iv).

Should you require further information regarding this matter, please contact Mr. Richard R. Belanger at (603) 474-9521, extension 4048.

Very truly yours,

Ted C. Feigenbaum

TCF:WJT/ssl

Enclosures: NRC Forms 366, 366A

New Hampshire Yankee Division of Public Service Company of New Hampshire
P. O. Box 300 o Seabrook, NH 03874 o Telephone (603) 474-9521

ATTACHMENT 1 TO 9008090069 PAGE 2 OF 2

United States Nuclear Regulatory Commission: August 3, 1990
Attention: Document Control Desk Page two

cc: Mr. Thomas T. Martin
Regional Administrator
United States Nuclear Regulatory Commission
Region 1
475 Allendale Road
King of Prussia, PA 19406

Mr. Noel Dudley
NRC Senior Resident Inspector
P. O. Box 1149
Seabrook, NH 03874

INPO
Records Center
1100 Circle 75 Parkway
Atlanta, GA 30339

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